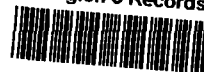


EPA Region 5 Records Ctr.



383721

**BEDROCK MONITOR WELL  
INSTALLATION REPORT  
ALLSTEEL MANUFACTURING FACILITY  
AURORA, ILLINOIS**

**March 2, 1988**

**Prepared for**

**Allsteel Incorporated  
Allsteel Drive  
Aurora, Illinois 60507-0871**

**RECEIVED  
MAR 2 1988  
IEPA/DLPC**

**Prepared by**

**Groundwater Management, Incorporated  
610 South 38th Street,  
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## SECTION 1

### INTRODUCTION

Groundwater Management, Inc. (GMI) and Layne-Western Company were retained by Allsteel Inc. to install a bedrock monitoring well on the east side of their manufacturing facility in Aurora, Illinois. The installation of this well is a portion of the continuing assessment of the degree of contamination in the subsurface in that area. The nature of problems, and the activities which have been conducted to date, are summarized in the report titled "Groundwater Contamination Investigation," dated June 9, 1987. The purpose of the bedrock well is to determine if contaminants have penetrated the bedrock below the overlying glacial drift.

This report documents the work performed and procedures followed during the well drilling, well completion and groundwater sampling. The results of the sample analysis are listed in the body of the report and are presented in full in the appendix of the report.

## SECTION 2

### LOCATION

The bedrock monitoring well was installed on October 27, 1987 within the limits of the contaminant plume and down gradient from the main body of the contamination on the eastern side of the Allsteel property. Figure 1 is a map that shows the approximate location of the bedrock monitor well with respect to the Allsteel building and the previously installed monitor wells. The well is located approximately 40 feet northeast of Monitor Well 4 and approximately 110 feet southwest of Monitor Well 5. It is approximately 90 feet directly east of the building.

The well is labelled MW-11 according to the sequential numbering system established for well installation at the beginning of the project (see Figure 1).

ALLSTEEL  
FACILITY

⊙ MW-3

○ MANHOLE

○ MW-1

MW-5 ⊙

⊙ MW-6

● MW-11

⊙ MW-4

STATE HIGHWAY 31

SCALE: 1" = 50'

JOB: ALLSTEEL  
JOB NO.: 390157  
LOCATION: AURORA ILLINOIS

### WELL LOCATION MAP

⊙ Existing Monitor Wells  
○ Plugged and Abandoned  
● Monitor Wells Installed  
For This Study

GROUNDWATER MANAGEMENT, INC.

FIGURE: 1

### SECTION 3

#### DRILLING METHODS

The drilling rig used for this project was a Gus-Pech, Brat-22R. The well was drilled to the top of bedrock using a ten-inch outer diameter hollow-stem auger. A four-inch surface casing was set into the bedrock and cemented in place. The hole was deepened to approximately ten feet into the bedrock using a mill tooth tricone rock bit and compressed air rotary drilling methods. The bedrock hole diameter was approximately four inches. The drill rig and down hole tools were decontaminated before drilling, after completion of the auger hole, and after completion of the bedrock well.

## SECTION 4

### GEOLOGY

Appendix A contains a geologic log that provides a description of changes in lithology with respect to depth and summarizes the well completion. The unconsolidated surficial deposits consisted of a mixture of brown gravel, sand, silt, and clay, becoming finer grained with depth. The sediments immediately overlying the bedrock were predominantly silts and clays. The bedrock was encountered at 25 feet below the ground surface. Approximately nine inches of bedrock were drilled with the auger bit. The bedrock was composed of a fine to coarsely crystalline light to medium gray limestone. A strong sulfurous odor was noticed while drilling the upper few feet of the bedrock. The formation water was initially a dark gray color.

MW-11

CASING ELEVATION - 645.21'  
GROUND ELEVATION - 642.09'

3.0' —

## SECTION 5

### WELL COMPLETION PROCEDURES

Figure 2 summarizes the construction of the bedrock well. The 4-inch outer casing extends from 0 to 25.7 feet. It was set inside the hollow stem of the 10-inch augers and driven approximately 0.13 feet into the bedrock. The 4-inch casing was cemented by filling the annular space between the casing and the augers with grout, then pulling the augers out of the hole. After removing the 10-inch augers, the remaining annular volume was filled with cement grout. The grout was allowed to cure for approximately 17 hours. A 4-inch open hole was drilled into the bedrock to a depth of 35.8 feet. Five feet of #10 slot stainless steel well screen was installed at the base of the 4-inch bedrock hole. Twenty-five feet of stainless steel casing was installed below the saturated zone and approximately 8 feet of PVC casing was installed above the saturated zone to extend the well to 3 feet above ground level. Number 4 Ottawa Silica filter pack was placed from 28.8 feet to total depth. A bentonite seal was placed from 26.5 feet to 28.8 feet. The remainder of the well annulus, between the 2-inch inner casing and 4-inch outer casing

grout (see Figure 2).



The well was developed by airlift pumping for one hour. Water samples were collected every 15 minutes to check for turbidity and the presence of fine grained material. The last sample was free of fine grained material and relatively clear. Approximately 15 gallons of water were produced and placed in a steel drum during development procedures. A mild sulfurous odor was noted throughout the development process.

A locking steel cap was placed over the completed well. A surface slab was constructed so that the cement sloped away from the well in all directions.

Static water level was recorded on November 30, 1987. The static water level was 11.5 feet below ground level. Elevations of the top of casing and ground level were surveyed by Allsteel personnel and are 645.21 feet and 642.09 feet above sea level, respectively.

## SECTION 6

### AIR QUALITY MONITORING

An Hnu photoionization detector was used to monitor the air quality in the vicinity of the rig and in the borehole. The air quality was checked frequently in the vicinity of the drill rig, in the hollow stem of the augers, and at the ground level near the borehole. At no time during the investigation were concentrations of organic vapors detected in the working environment that would be considered hazardous (greater than 5 ppm for 3 minutes). Slightly higher (greater than 20 ppm) Hnu readings were measured on the drilling equipment as it was removed from the borehole. Hnu readings are reported from the borehole in the geologic log (Appendix A).

SECTION 7  
WATER QUALITY SAMPLING

A water sample was collected for volatile organic compound (VOC) analysis from this well on December 8, 1987. The sample was collected using a teflon bailer. The bailer was decontaminated by washing with a non-phosphate detergent, rinsing with distilled water and methyl alcohol to prevent cross contamination. At least three times the casing volume of water in the well was bailed to retrieve a fresh formation sample. Field personnel wore disposable rubber gloves to avoid contamination of the bailer. The water sample was carefully poured into collection bottles provided by Aqualab Inc. of Bartlett, Illinois. The sample was sealed in the bottles then put on ice and delivered to the lab for analysis. The results of the analysis are presented in Appendix B.

**APPENDIX A**  
**GEOLOGIC LOG AND WELL COMPLETION**

ALLSTEEL BEDROCK WELL  
GEOLOGIC LOG

Job Number: 39-0157

Date: October 27, 1987

Driller: Don Pagenkopf, Layne-Western Company, Inc.

Hydrogeologist: Lee Nageotte, GMI

Location: Approximately 100 feet east of the southeast corner of the Allsteel building.

Ground Level: 642.09 feet

Total Depth: 35.8 feet

Static Water Level: 11.5 feet below ground level

<u>Interval (feet)</u>	<u>Description</u>
0 - 1.5	<u>Top Soil</u> - dark brown to black, organic
1.5 - 3.5	<u>Silt</u> - medium brown with coarse gravel
3.5 - 8.0	<u>Rock and cobbles</u> - in a sand and silt matrix, medium brown, dry, Hnu - 1ppm
8.0 - 14.0	<u>Rock and cobbles</u> - very coarse grained, minor sand, Hnu - 1ppm
14.0 - 17.0	<u>Sand and silt</u> - medium brown, fine grained, damp, gravel, Hnu - 2ppm
17.0 - 20.0	<u>Gravel</u> - medium brown, very coarse, poorly sorted, in a sand and silt matrix, Hnu - 2ppm
20.0 - 22.0	<u>Clay</u> - light to medium brown, soft silty, wet, with gravel
22.0 - 25.0	<u>Clay and silt</u> - medium brown, soft, wet, sandy in part with, pebble inclusions
25.0 - 27.0	<u>Limestone</u> - white to light gray, fine crystalline, hard, dense, dark gray water, Hnu - 8 ppm in borehole
27.0 - 35.8	<u>Limestone</u> - White to light gray as above, coarsely crystalline in part, Hnu - 1-4 ppm

ALLSTEEL BEDROCK WELL  
WELL COMPLETION

4-inch surface casing: 0 - 25.75 feet  
2-inch - PVC casing: 0 - 5.2  
2-inch stainless steel casing: 5.2 - 30.2  
2-inch #10 slot stainless steel screen: 30.2 - 35.2  
2-inch sediment trap (plug): 35.2 - 35.8  
Filter pack (#4 Ottawa Silica): 28.8 - 35.8  
Bentonite seal: 26.5 - 28.8

**APPENDIX B**  
**WATER QUALITY ANALYSIS**



850 West Bartlett Road, Bartlett, Illinois 60103 312/289-3100

16 December 1987

Mr. Lee Nageotte  
GROUNDWATER MANAGEMENT  
610 South 38th Street  
Kansas City KS 66106

RECEIVED

DEC 21 1987

GROUNDWATER MGMT.  
K.C., KS

Dear Mr. Nageotte:

Enclosed are the analytical results for the water samples received by AQUALAB on 09 December 1987. These samples were analyzed for volatile organics. The methods used for these analyses are found in the Federal Register, 43250, October 26, 1984.

Volatile organic analyses (VOA) were performed using EPA Method 624. Aliquots of the samples are placed in a sparging device. Internal standards and deuterium labelled surrogates are added to verify the analytical results and provide qualitative and quantitative references for every sample. The samples are then purged with helium and the volatile organics are transferred to the gas stream. The organics are removed from the gas stream with a Tenax/Silica Gel trap. When purging is complete, the trap is rapidly heated and the trapped organics transferred to the analytical chromatographic column of a gas chromatograph/mass spectrometer (GC/MS). As the individual components elute, complete mass spectra are collected and stored by a computer system. The data are then processed by custom computer programs and also evaluated manually to detect and quantify priority pollutants. Identifications are verified by comparison of the sample component mass spectrum and retention time to that of the standard component.

If after reviewing these results you have any questions, please feel free to call. AQUALAB has been pleased to provide these analytical services for you.

Sincerely,

AQUALAB INC.

  
William H. Mottashed  
Division Manager

WHM/dab  
Encls.

11/11/87





850 West Bartlett Road, Bartlett, Illinois 60103 312/289-3100

## ANALYTICAL REPORT

Mr. Lee Nageotte  
GROUNDWATER MANAGEMENT  
610 South 38th Street  
Kansas City KS 66106

12-16-87

Sample No.: 55591

Sample Description: MW-11  
Allsteel; 39-0157

Date Taken: 12-08-87 1150

Date Received: 12-09-87 1355

### VOLATILE COMPOUNDS

Acrolein	<10.	ug/L
Acrylonitrile	<10.	ug/L
Benzene	61.4	ug/L
Bromodichloromethane	<1.0	ug/L
Bromoform	<1.0	ug/L
Bromomethane	<10.	ug/L
Carbon tetrachloride	<1.0	ug/L
Chlorobenzene	<1.0	ug/L
Chloroethane	276.	ug/L
2-Chloroethylvinyl ether	<1.0	ug/L
Chloroform	<1.0	ug/L
Chloromethane	<10.	ug/L
Dibromochloromethane	<1.0	ug/L
1,2-Dichlorobenzene	<1.0	ug/L
1,3-Dichlorobenzene	<1.0	ug/L
1,4-Dichlorobenzene	<1.0	ug/L
1,1-Dichloroethane	288.	ug/L
1,2-Dichloroethane	<1.0	ug/L
1,1-Dichloroethene	<1.0	ug/L
cis-1,2-Dichloroethene	133.	ug/L
trans-1,2-Dichloroethene	13.8	ug/L
1,2-Dichloropropane	4.7	ug/L
cis-1,3-Dichloropropene	<1.0	ug/L
trans-1,3-Dichloropropene	<1.0	ug/L
Ethyl benzene	94.9	ug/L
Methylene chloride	23.1	ug/L
1,1,2,2-Tetrachloroethane	<1.0	ug/L
Tetrachloroethene	3.1	ug/L
Toluene	48,100.	ug/L
1,1,1-Trichloroethane	22.1	ug/L

William H. Mottashed, Manager  
Bartlett Division



850 West Bartlett Road, Bartlett, Illinois 60103 312/289-3100

## ANALYTICAL REPORT

Mr. Lee Nageotte  
GROUNDWATER MANAGEMENT  
610 South 38th Street  
Kansas City KS 66106

12-16-87

Sample No.: 55591

Sample Description: MW-11  
Allsteel; 39-0157

Date Taken: 12-08-87 1150

Date Received: 12-09-87 1355

### VOLATILE COMPOUNDS

1,1,2-Trichloroethane	<1.0	ug/L
Trichloroethene	7.2	ug/L
Trichlorofluoromethane	<1.0	ug/L
Vinyl chloride	86.3	ug/L
Xylenes, Total	7000.	ug/L

*William H. Mottashed*  
William H. Mottashed, Manager  
Bartlett Division

**NET**

A NATIONAL ENVIRONMENTAL TESTING INC. COMPANY